

ENERGY MANAGEMENT PLAN

MSFC

May 26, 2004

Presented At:

NASA Environmental Conference

Albuquerque, NM

Energy and Water Management Master Plan

February 2004



Energy Efficiency Goal

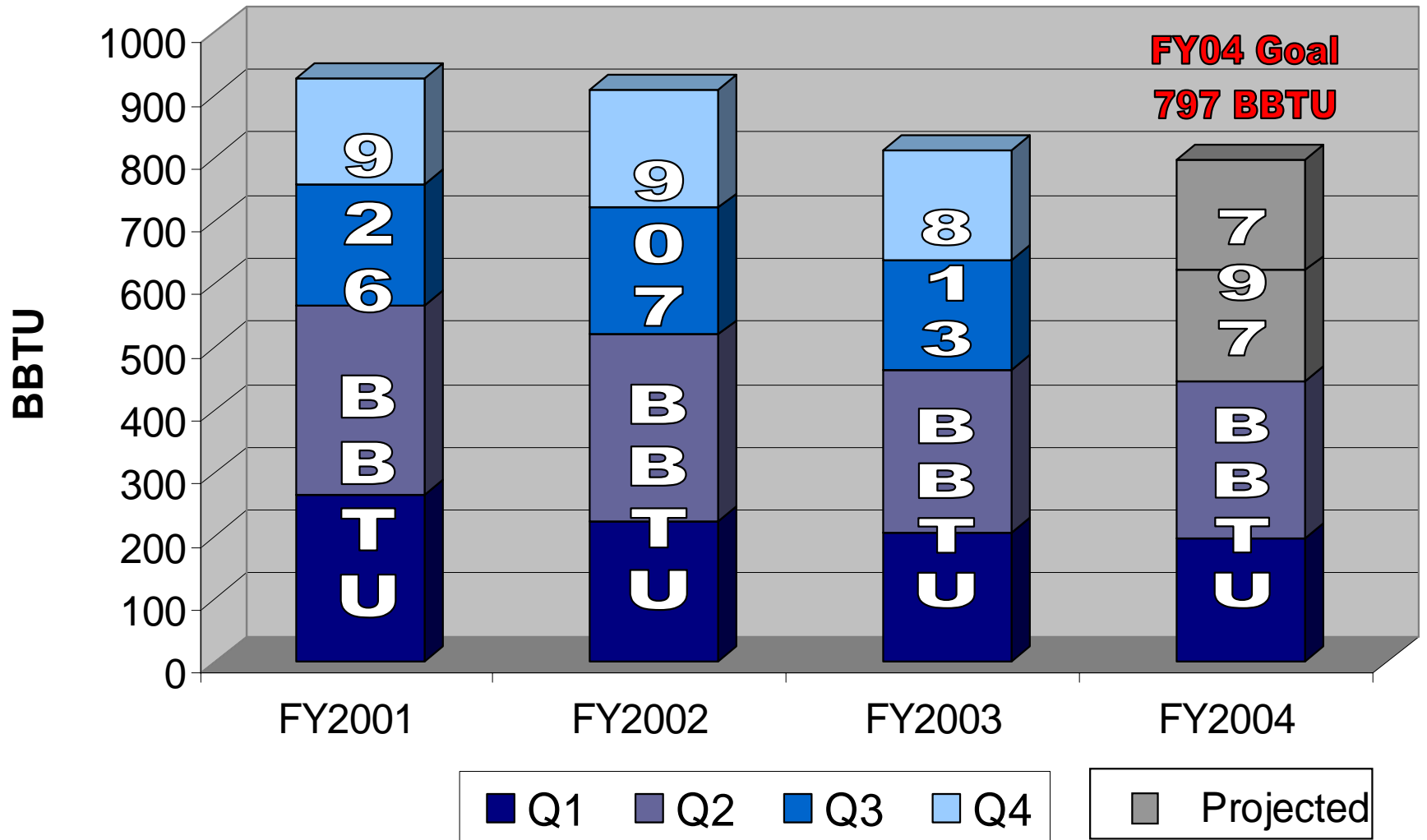
- **MSFC SIZE – 4,322,600 sf**
- **EIF – 2,202, 974 sf**
- **NMV – 2,119,626 sf**
- **To meet 2010 energy-efficiency goals
MSFC must lower energy usage to 761
BBTU's**

1 BBTU
Saves/Costs

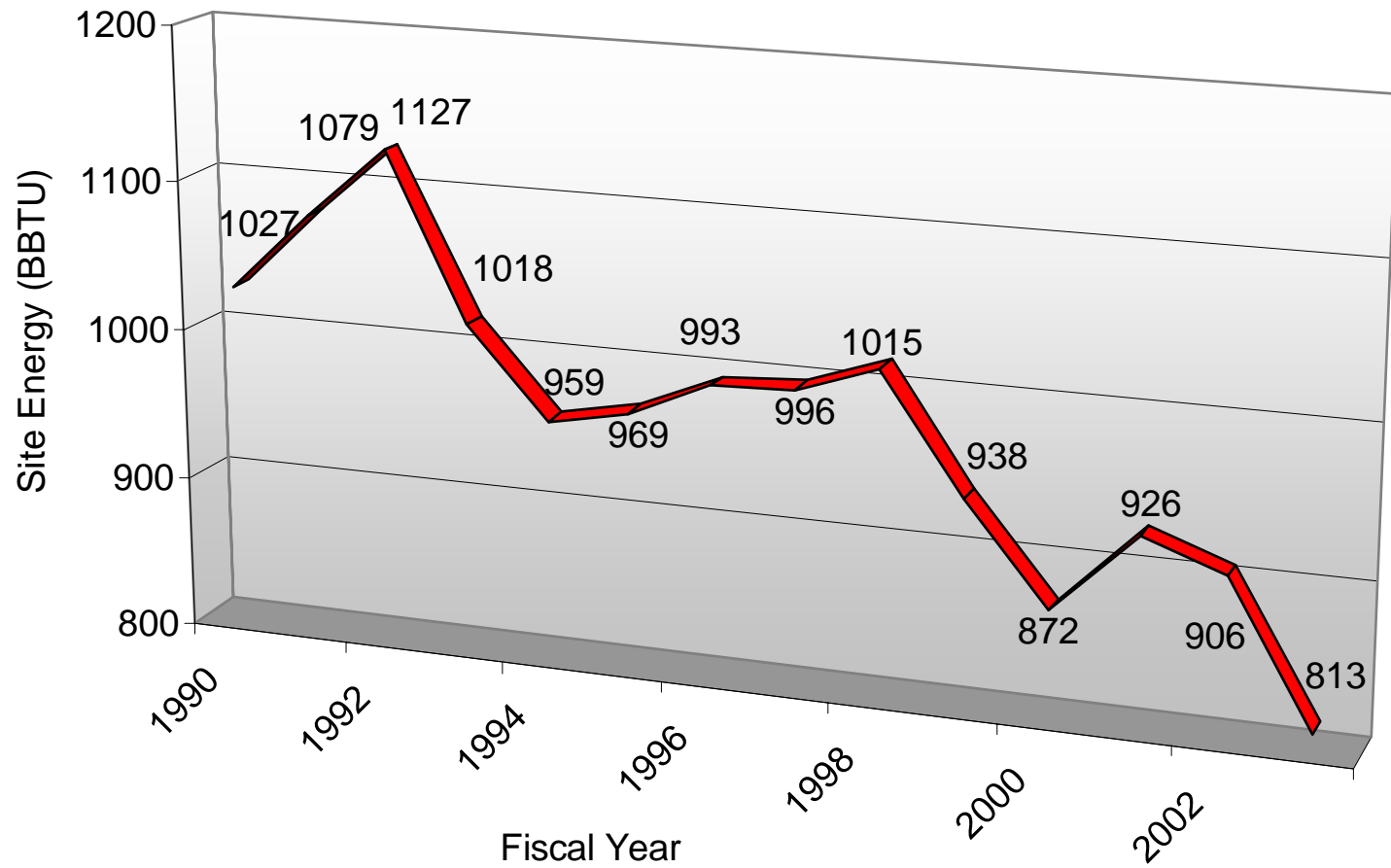
\$16,000

Energy Consumption Trend (BBTU) at MSFC

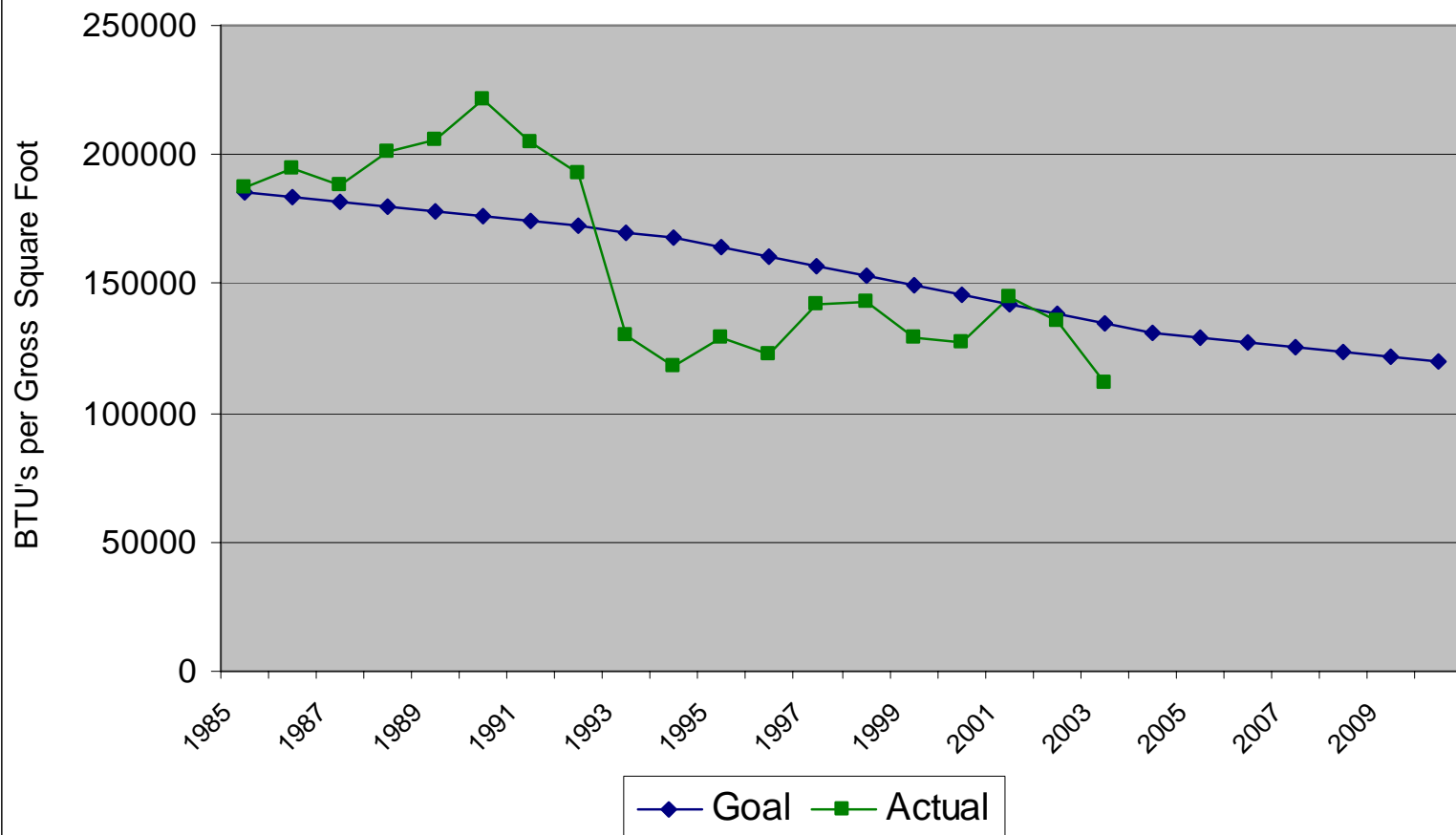
1 Billion BTU's = Approx \$16,000



MSFC Total Energy Consumption

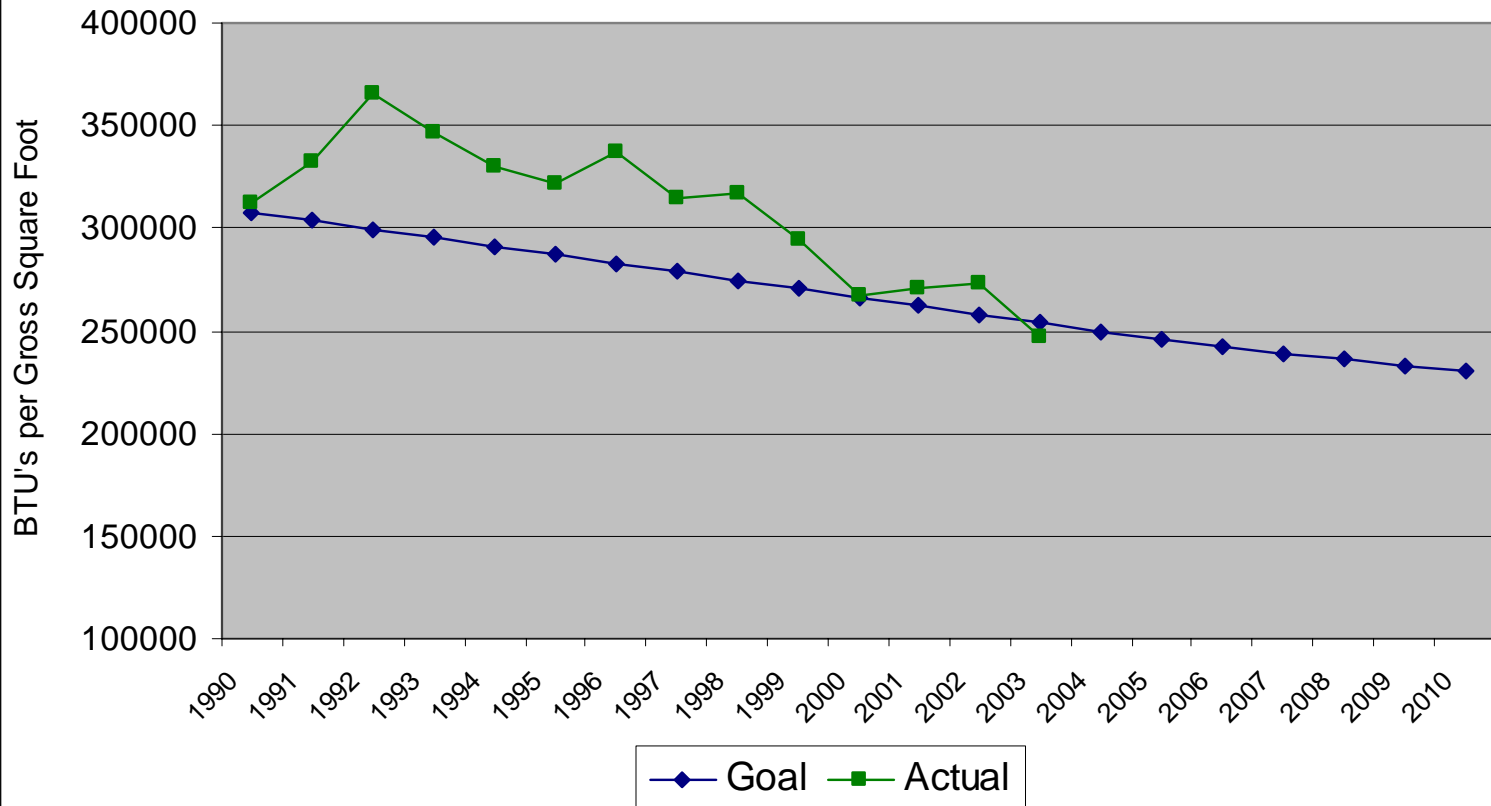


Environmental Management Division Energy Reduction Progress in MSFC Non-Mission Variable Buildings



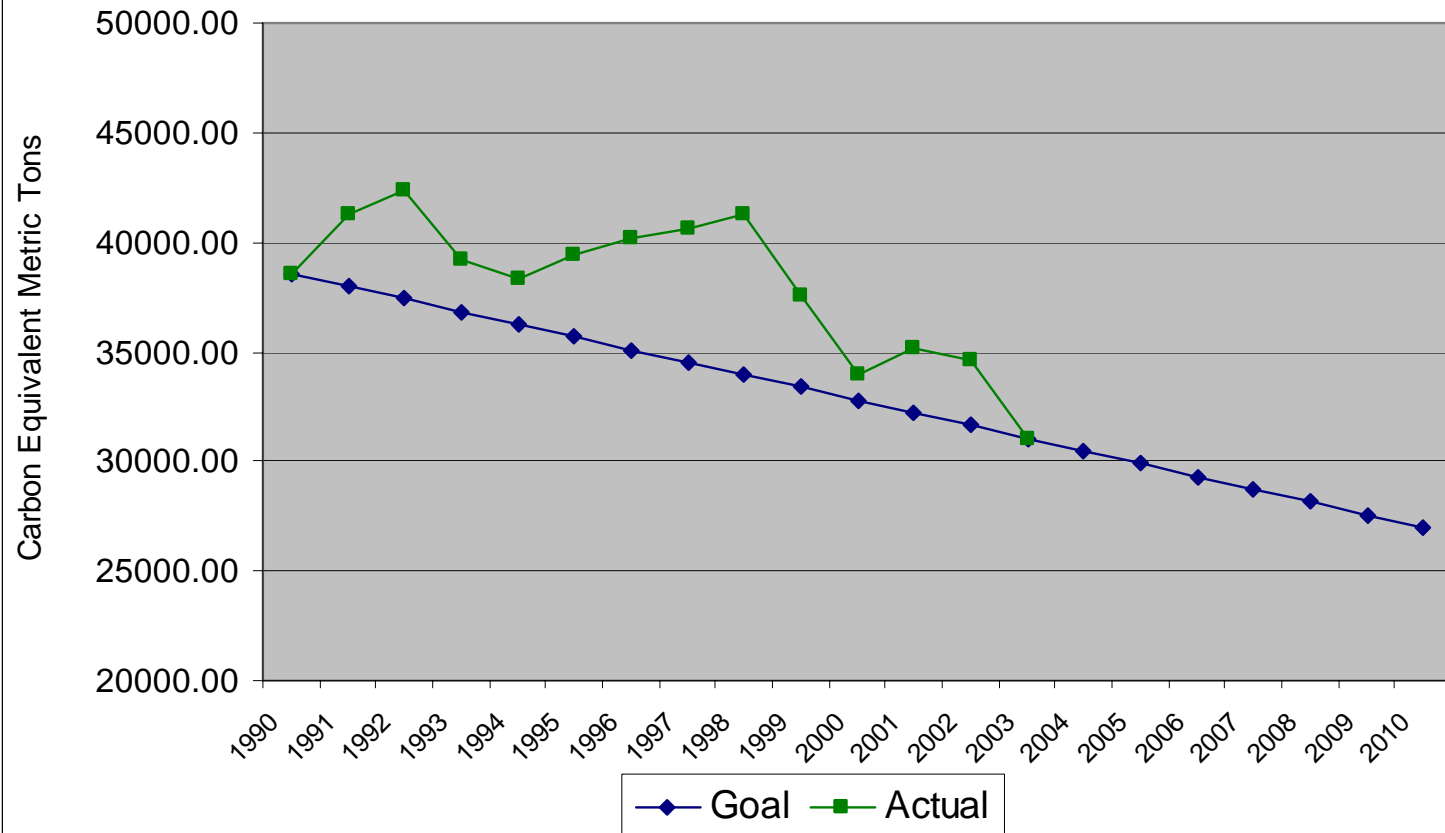
Energy reduction goals mandated by Executive Orders (EO) 12759/12902/13123 and the National Energy Conservation Policy Act (NECPA) are to reduce 10% by the end of 1995 from 1985 baseline, 20% by the end of 2000, and 35% by the end of 2010

Environmental Management Division Energy Reduction Progress in MSFC Energy Intensive Facilities



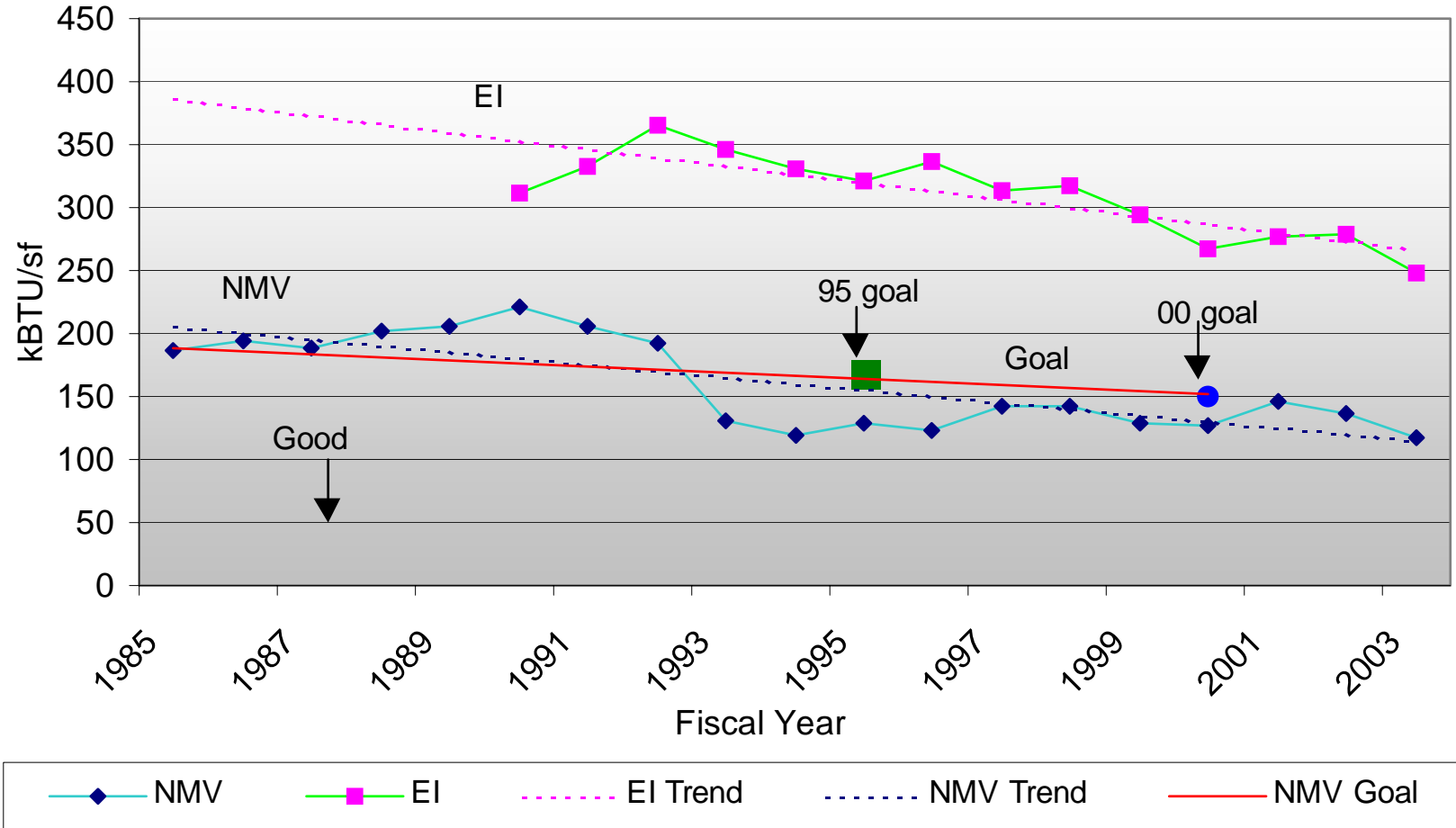
Energy reduction goals mandated by Executive Orders (EO) 12759/12902/13123 and the National Energy Conservation Policy Act (NECPA) are to reduce 20% by the end of 2005 from 1990 baseline, and 25% by the end of 2010

Environmental Management Division Greenhouse Gases Reduction



Greenhouse reduction goals mandated by Executive Orders (EO) 12759/12902/13123 and the National Energy Conservation Policy Act (NECPA) are to reduce 30% by the end of 2010 from 1990 baseline

NMV/EI Energy Use with Past Goals



Plan To Meet Energy-Efficiency Goals

- **Annual budget set aside for energy and water conservation projects of - \$1M**
- **Complete energy and water conservation audits and designs for the following FY**
- **Implement energy and water conservation projects based on LCC from past FY audits**
- **Evaluate plan effectiveness**
- **Repeat the cycle**

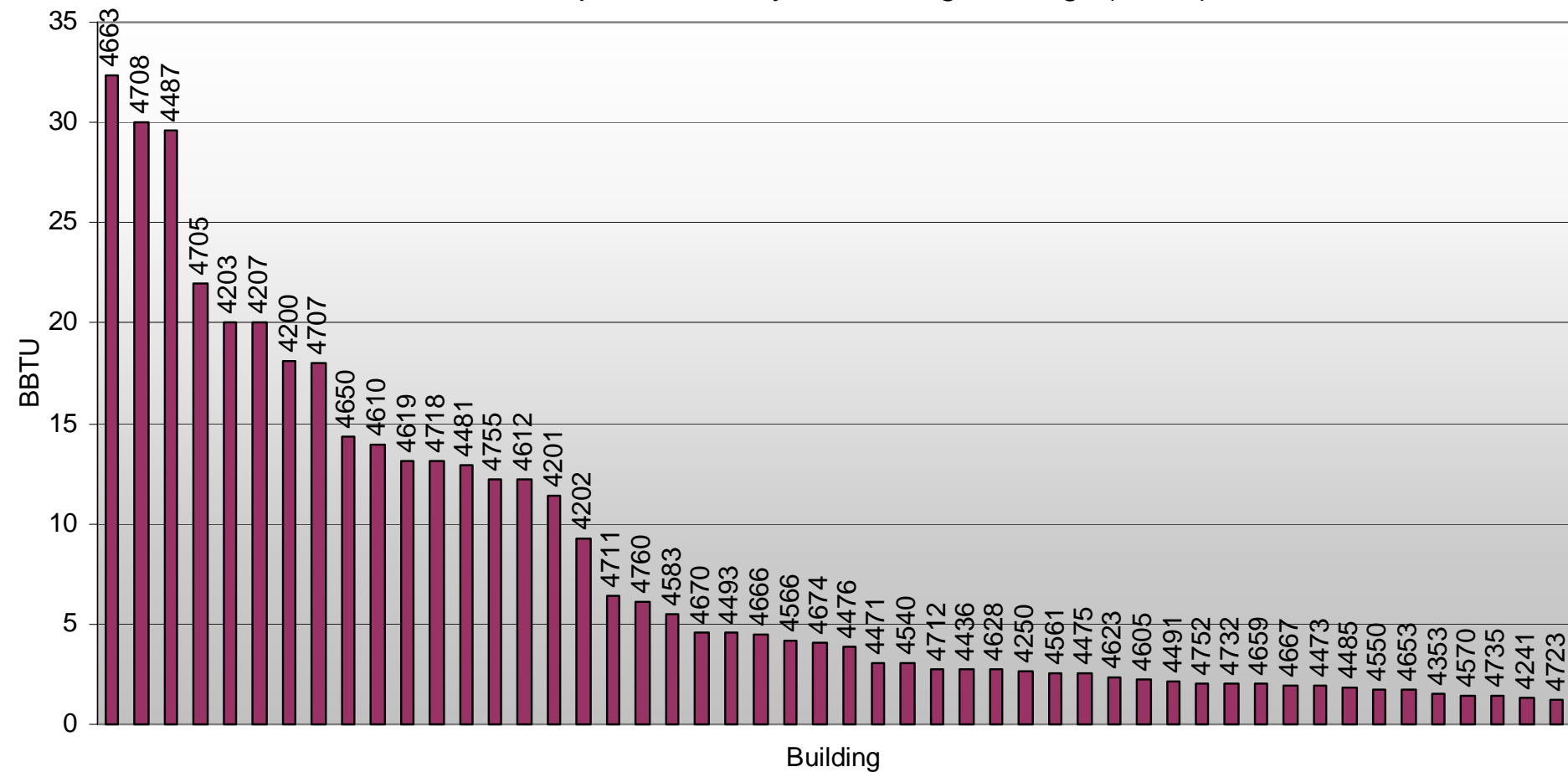
Significant Insight Learned From 5-Year Plan

- **Top energy users** (*buildings*)
- **Top energy users** (*test structures*)
- **Building Replacement Plan** (*20-year goal*)
- **Building Demolition Plan**
- **Effects of new energy legislation**

Top 10 Electricity-consuming Building Descriptions

Top 10 Electricity Consumers	
4663	(EI) Computer Facility
4708	(EI) Engineering & Development Laboratory
4487	(EI) Laboratory & Office Building
4705	(EI) Shop & Neutral Buoyancy Simulator
4203	(NMV) Office Building
4207	(EI) Communication Facility
4200	(NMV) Office Building
4707	(EI) Productivity Enhancement Facility
4650	(NMV) Shop & Calibration Facility
4610	(NMV) Office & Engineering Building

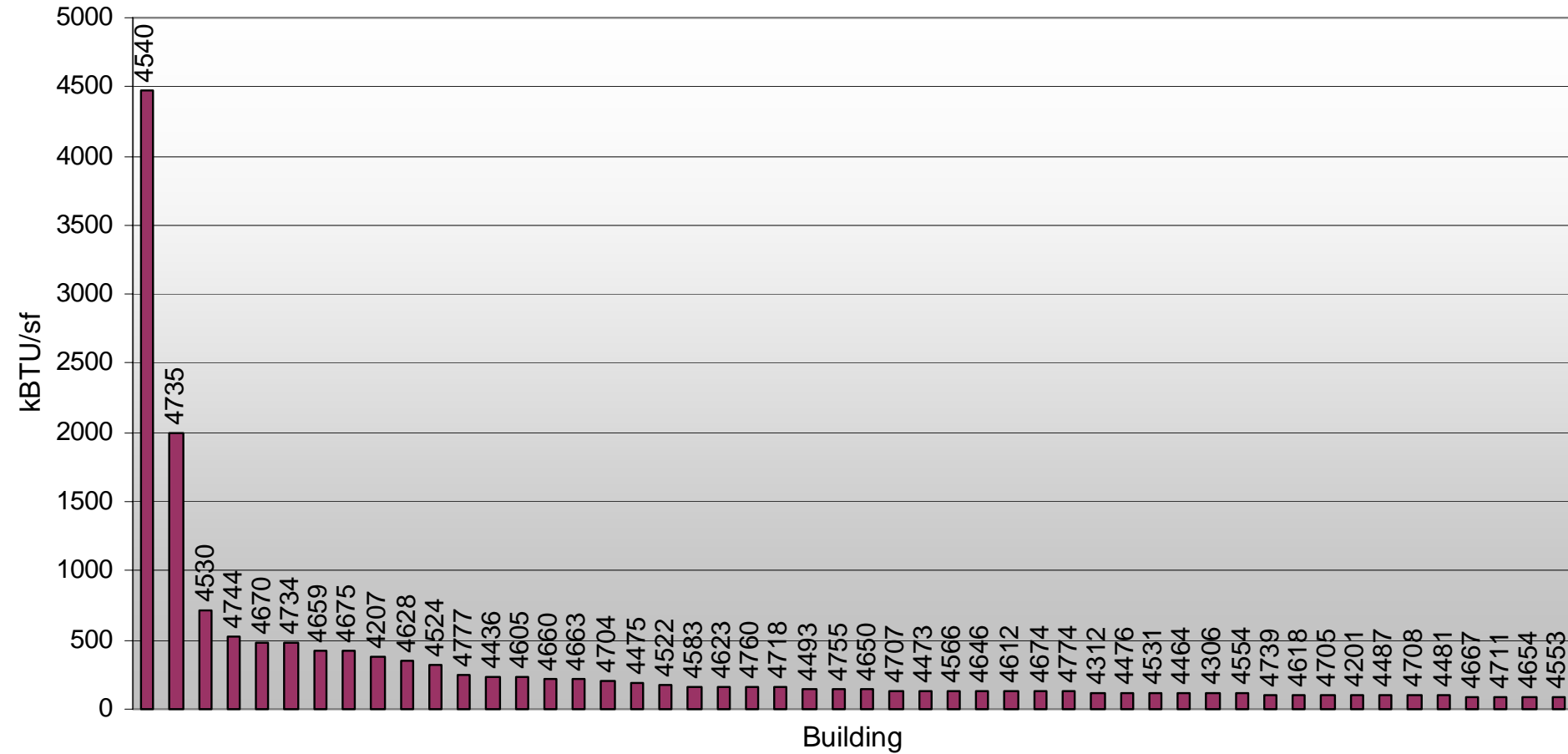
FY 2002 Top 50 Electricity-Consuming Buildings (BBTU)



Top 10 Electricity Consumers (by Area) Descriptions - EI

Top 10 Electricity Consumers (kBTU/sf)	
4540	(S) Test Facility 116
4735	(S) Air Dryer House
4530	(S) Test Facility 300
4744	(S) Compressed Air Facility
<u>4670</u>	(S) Advanced Engine Test Facility
4734	(S) Vacuum Pump House
4659	(EI) High Pressure GN 2 Facility
4675	(S) Boiler House
4207	(EI) Communications Facility
4628	(EI) Hydrogen Test Facility

FY 2002 Top Electricity-consuming Buildings or Structures by Area



MSFC 20-year Replacement Program

	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	
New Constr	4600	4601	4602	4481 Replacement	4200 Project "Bldg A"		4200 Project "Bldg B"		4200 Renovation			Program Net Changes
	4631				"Service Bldg"							
New Sq Ft	187,600	151,100	135,000	100,000	130,000		185,000		na			888,700
Demo/ Abandon		4471A	4467	4612	4481	4202			4200		4201	
		4712	4492	4617							4610E	
		4566*	4610W								4613	
		4609	4634									
			4645									
			4654									
			4715									
			4728									
			4739									
			4759									
			4764									
			4767									
Demo/ Abandon Sq Ft		-204,636	-120,424	-97,079	-135,849	-109,201			na		-235,682	-902,871

Most Successful Attributes of Energy and Water Program

- Incorporation of energy conservation, sustainability, and LEED into every aspect of planning, design, construction, and maintenance
- Updated engineering design and meter standards (*New buildings are designed to operate at 80% of FY 2010 energy-efficiency goals*)
- Center meter installation plan in next 5-Years
- Cooperative decision to “NOT” use “Alternative Financing” as priority methodology for meeting goals

Contacts

- Cedreck Davis – 256.544.3221 – Email: cedreck.g.davis@nasa.gov
- Juergen Haukohl – 256.544.4581 – Email: juergen.haukohl@msfc.nasa.gov